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EXAMINER

KOSLOW, CAROL M

| ART UNIT | PAPER NUMBER |
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1755

DATE MAILED: 02/26/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/646,978

Applicant(s)

HAO ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The references cited in the Search Report 2 May 2000 have been considered, but will not be listed on any patent resulting from this application because they were not provided on a separate list in compliance with 37 CFR 1.98(a)(1). In order to have the references printed on such resulting patent, a separate listing, preferably on a PTO-1449 form, must be filed within the set period for reply to this Office action.

The disclosure is objected to because of the following informalities:

On page 1, line 28, a space should appear between "USP" and "5". On line 29 on page 1, the dot after SrO is missing from the formula. On page 2, lines 3 and 4, the period in the formulas should be dots. Also in line 4, "1.025" should not be a subscript. On page 3, line 3. "3•95" should be "3.95". The heating step 2 is ambiguous as written. The description of step 2 and the process of the first and second embodiments do not make clear the actual heating process, since it is unclear if the actual heating time is three hours or 8-9 hours or if the three hours refers to the time it takes to raise the temperature from 850°C to 1200°C and the 5-6 hours is the time the material is heated at 1200°C. It is noted that the statement "to increase it temperature" in line 5 of both embodiments is grammatically incorrect and makes no sense. It is unclear how the two embodiments can have the same formula when each starts with different

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amounts of the raw materials and how the compounds of the embodiments can have different properties when they have the same formula. Page 5, lines 6 and 7 states table 1 shows the disclosed material has an afterglow time of 80 hours or more, but table 1 only measures the afterglow time from 5 second to 480 minutes or 8 hours and the showing in the table would not lead one of ordinary skill in the art to expect to the afterglow brightness to be maintained for at least an additional 72 hours, due to the rate of decrease shown. Thus table 1 does not show the disclosed material has an afterglow time of 80 hours or more. Given the teachings in table 1, there is a question if the compounds of the embodiments actually have an afterglow time of 80 and 85 hours. The specification does not teach the compositions of samples 1-5. Also it is unclear how the average brightness and the standard deviation in table 1 are determined. The specification does not teach the ratio of $(\text{Sr}, \text{Eu}, \text{Dy})_{0.95 \pm x}(\text{Al}, \text{B})_2\text{O}_{3.95 \pm x}$ to $(\text{Sr}, \text{Dy}, \text{Eu})_{4-x}(\text{Al}, \text{B})_{14}\text{O}_{25-x}$ in the formula. In addition, the specification does not teach the individual amounts of B, Dy and Eu in $(\text{Sr}, \text{Eu}, \text{Dy})_{0.95 \pm x}(\text{Al}, \text{B})_2\text{O}_{3.95 \pm x}$ nor in $(\text{Sr}, \text{Dy}, \text{Eu})_{4-x}(\text{Al}, \text{B})_{14}\text{O}_{25-x}$. Finally, if $(\text{Sr}, \text{Eu}, \text{Dy})_{0.95 \pm x}(\text{Al}, \text{B})_2\text{O}_{3.95 \pm x}$ and $(\text{Sr}, \text{Dy}, \text{Eu})_{4-x}(\text{Al}, \text{B})_{14}\text{O}_{25-x}$ are the two phases in the compound, then the compound would not be expected have the taught general formula, which implies a solid solution of the given aluminates. Appropriate correction is required.

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 1 and 2 are objected to because of the following informalities: In claim 1, the dash in the subscript " $3.95 \pm x$ -" should not be part of the subscript. In claim 2, x is missing from the subscript " $3.95 \pm x$ ". Appropriate correction is required.

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Claims 3 and 4 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form.

The specification teaches the claimed compound having the claimed formula inherently have the structural limitations of claims 3 and 4. Also it is clear from the formula that Al-O tetrahedron and Al-O octahedron exist concurrently and that part of the Al-O octahedron is substituted by the BO_3 triangular arrangement.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The subject matter of claim 2 is not taught by the specification.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims do not teach the ratio of $(\text{Sr,Eu,Dy})_{0.95\pm x}(\text{Al,B})_2\text{O}_{3.95\pm x}$ to $(\text{Sr,Dy,Eu})_{4-x}(\text{Al,B})_{14}\text{O}_{25-x}$ in the formula. In addition, the claims do not teach the individual amounts of B, Dy and Eu in $(\text{Sr,Eu,Dy})_{0.95\pm x}(\text{Al,B})_2\text{O}_{3.95\pm x}$ nor in $(\text{Sr,Dy,Eu})_{4-x}(\text{Al,B})_{14}\text{O}_{25-x}$. Without this information, one of ordinary skill in the art cannot determine what compounds applicants consider as their invention. If $(\text{Sr,Eu,Dy})_{0.95\pm x}(\text{Al,B})_2\text{O}_{3.95\pm x}$ and $(\text{Sr,Dy,Eu})_{4-x}(\text{Al,B})_{14}\text{O}_{25-x}$ are the two phases in the compound, then the compound would not be expected have the taught

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general formula, which implies a solid solution of the given aluminates. Claim 2 is unclear as written. It's meaning cannot be determined since it implies $(\text{Sr}, \text{Eu}, \text{Dy})_{0.95 \pm x} (\text{Al}, \text{B})_2 \text{O}_{3.95 \pm x}$ is formed from $(\text{Sr}, \text{Dy}, \text{Eu})_{4-x} (\text{Al}, \text{B})_{14} \text{O}_{25-x}$. Claim 2 also is broader than claim 1 since claim 1 teaches the compound has the claimed formula and claim 2 teaches the compound comprises $(\text{Sr}, \text{Eu}, \text{Dy})_{0.95 \pm x} (\text{Al}, \text{B})_2 \text{O}_{3.95 \pm x}$, which is excluded by claim 1. Claim 5 recites the limitation "said diplophase compound crystalline". There is insufficient antecedent basis for this limitation in the claim or in claim 1. Also it is unclear what is meant by "diplophase compound crystalline". The heating step 2 in claim 6 is ambiguous as written. The description of step 2 does not make clear the actual heating process, since it is unclear if the actual heating time is three hours, or 8-9 hours or if the three hours refers to the time it takes to raise the temperature from 850°C to 1200°C and the 5-6 hours is the time the material is heated at 1200°C.

Pet et al and Royce et al are cited as of interest since they teach light-emitting materials comprising compounds having the formula $(\text{Sr}, \text{Eu}, \text{Dy})(\text{Al}, \text{B})_2 \text{O}_4$ or $(\text{Sr}, \text{Eu})_4 (\text{Al}, \text{B})_{14} \text{O}_{25}$.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (703) 308-3817. The examiner can normally be reached on Monday-Thursday from 7:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (703) 308-3823.

The fax number for Amendments filed under 37 CFR 1.116 or After Final communications is (703) 872-9311. The fax number for all other official communications is (703) 872-9310.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661 or (703) 308-0662.

cmk
February 22, 2002



C. Melissa Koslow
Primary Examiner
Tech. Center 1700